Math 2250-4
Review sheet for exam 1, which is Thurs 2/17 in your section
problem session TBA
       (Tuesday evening or Wed. p.m.)

Chapter 1 : Methods to solve certain 1st order DE's
      integration, for $\frac{dy}{dx} = f(x)$
           position, veloc, accel, when accel is a fun of t alone.
      separable DE's
           growth & decay (exponential)
                populations, radioactive decay, Newton's law of cooling (with constant ambient
                                                                                        temp.)
                drug elimination, rumor propogation, disease spread.
                NO TORRICELLI ON EXAM
      linear 1st order DE's
           mixing problems
      slope fields and phase diagrams to understand qualitative behavior of sol'ns
           without knowing formula for solution fcn.
           How to draw these, especially for autonomous DE's.

Chapter 2 : Applications in depth
      population models: logistic, doomsday/extinction, harvesting logistic;
           understand derivations, how to find solutions (by separating variables),
           how to plot slope fields & phase portraits, how to find equilibrium
           solutions and evaluate stability/instability.
      equilibrium solt'ns & stability for general 1st order autonomous DE's.
      acceleration-velocity models, especially linear drag (force proportional
           to velocity.)
           NO NUMERICAL METHODS (2.4-2.6) ON EXAM.

Chapter 3 : Linear systems and matrices
      solving linear systems by creating the augmented matrix, using elementary
           row ops to get rref, deducing solution by backsolving.
      geometric meaning of linear systems in 2 or 3 variables
      Matrix algebra : addition, scalar multiplication, matrix multiplication
           What algebra rules hold, and which one(s) don't.

           Matrix inverses
                how to compute via row operations
                how to solve linear systems with the inverse matrix,
                     if the inverse exists.

           Determinants
                how to compute with cofactors
                how to compute with row ops
                Cramer's rule
                Adjoint formula for the inverse, esp. 2×2 & 3×3 cases.

Be able to ~~do~~
solve problems _and_
to explain key ideas